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Connectivity on a Sasanian frontier: Route Systems in the Gorgan Plain of North-East Iran

Kristen Hopper¹

Frontiers and connectivity

Frontiers are often drawn as simplistic linear borders, which fails to represent their dynamic nature. In reality they are comprised of multiple, and often overlapping, military, cultural or economic boundaries that can range along a continuum between physical barriers and conceptual boundaries; this makes them important zones of cultural contact where identities, and political and social affiliations are formed and reformed at different scales and through time.² Recent work on the northern and western frontiers of the Sasanian Empire has deepened our understanding of military boundaries in these borderlands, where the Sasanian Empire appears to have excelled at utilising and augmenting natural features, or constructing elaborate defensive systems to limit or constrain movement.³ However, these military frontiers often represent only one element within a complex frontier zone. In order to develop a more nuanced understanding of an empire's interactions with communities within and beyond its frontiers, we also need to explore evidence (or lack therefore) for the cultural and economic boundaries that existed alongside these military barriers, as well as evidence for the changing nature of these frontiers through time.

Empires, it can be argued, are perhaps best portrayed as a series of networks operating at different scales; these networks are made up of nodes of investment connected by routes for communication and transport.⁴ Frontiers are one of these nodes, as well as, in some cases, connectors themselves.⁵ As well as existing at different scales, these networks also change through time as physical and ideological frontiers, levels of imperial control and many other factors change.⁶ Therefore one way in which to explore the dynamic and changing nature of frontiers is through an investigation of the archaeological evidence for diachronic networks within these landscapes at different scales. This paper will discuss the types of archaeological evidence that we find for connectivity on several geographically dispersed frontiers of the Sasanian Empire before exploring, in detail, the archaeological evidence for local and regional pathways of movement and interregional connectivity in the

Gorgan Plain (see Figs 1 and 2). Starting with the period contemporary with the use of the Gorgan Wall, I will also draw on evidence for earlier and later period networks to develop a broad understanding of how connectivity, and by extension cultural, political and economic boundaries, changed through time.

Archaeological evidence for route systems in frontier zones

The most obvious evidence for ancient route systems are the physical manifestations of the routes themselves. In some cases, the restrictions of topography allow us to more easily identify major routes through the landscape. For example, the Dariali Gorge, straddling the border between modern Georgia and Russia, has been a key route through the Caucasus Mountains since antiquity; historical sources and current archaeological investigations indicate that control of this pass, via fortifications such as the Dariali Fort, appears to have been important to local kingdoms and foreign powers, including the Sasanian Empire from the third century AD.⁷ While many local routes exist within the landscape, regional routes that would ensure the expedient movement of people and goods are constrained by topography.

Direct evidence for local routes can be found in the form of hollow ways. Hollow ways are depressed linear features that represent ancient roads, tracks or drove-ways often radiating out from, and sometimes connecting, archaeological sites created by the repeated movement of people and animals over considerable periods of time.⁸ In the Near East, these features are most clearly identifiable on aerial photographs and satellite imagery, and in particular on the historical images taken from the CORONA satellite in the 1960s and 1970s.⁹ While many hollow ways have been documented in Northern Mesopotamia, and relate to Bronze Age activity,¹⁰ instances also exist in Khuzestan, where some examples can be associated with late Sasanian sites.¹¹ Extensive hollow way systems have also been mapped in the Gorgan Plain, and while many appear to be related to Late Iron Age through to possibly Parthian activity they are important for our understanding of how local route systems have changed through time. The survival of these features, however, is linked to factors such as environmental conditions and the intensity of later settlement and land use.¹²

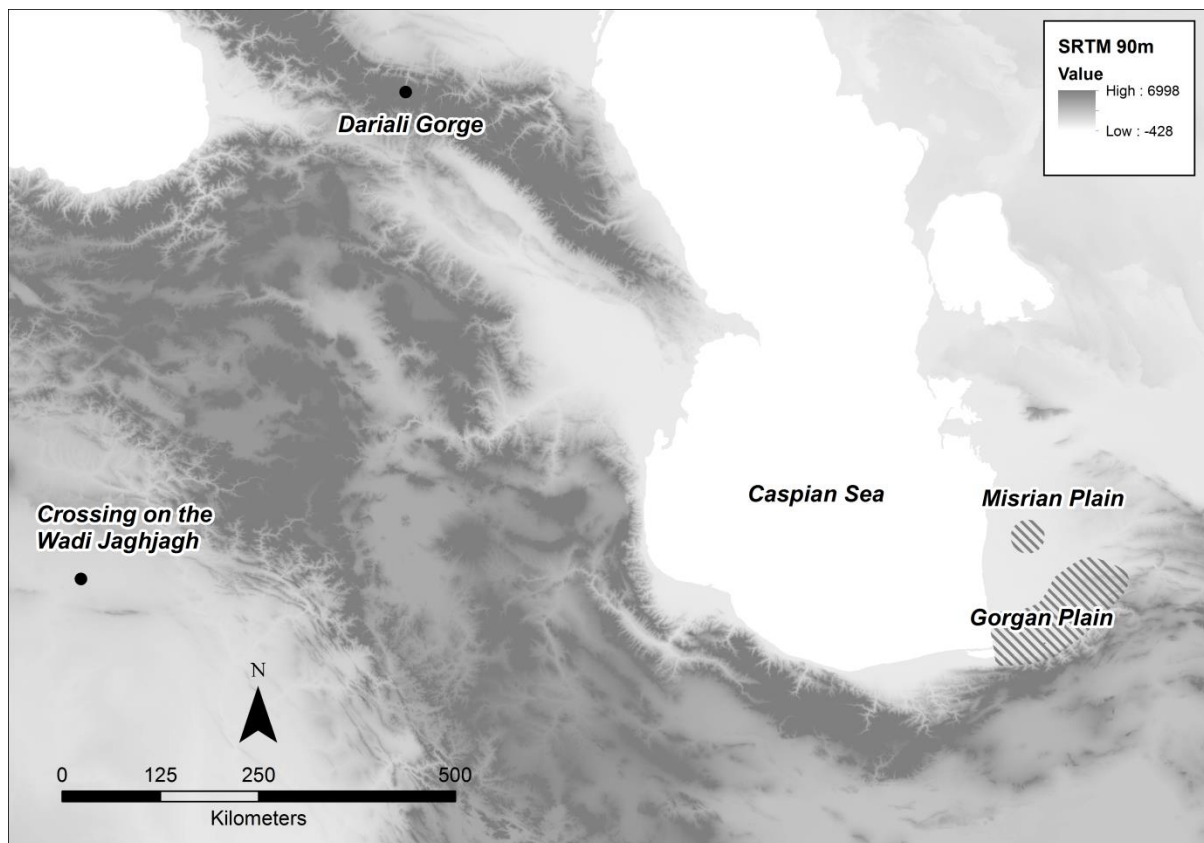


FIGURE 1: LOCATIONS MENTIONED IN THE TEXT. ELEVATION DATA - SRTM 90 M RESOLUTION (DATA AVAILABLE FROM THE U.S. GEOLOGICAL SURVEY).

On frontiers where linear boundaries such as long-walls, rivers, canals or ditches are found, evidence for crossing points of these features can represent nodes along route systems.¹³ For example, a ford crossing the Wadi Jaghjagh in the Khabur basin of eastern Syria, a region which formed a frontier zone between the Roman/Byzantine and Sasanian Empires, may represent such a node in a postulated Late Antique route system.¹⁴ Interestingly, at certain times the wadi may have demarcated a military frontier.¹⁵ Of further interest are two rectilinear fortifications, known as the Castellum and Sabakh, sitting on either side of the river near the ford. Limited ceramic finds from the Castellum (on the west bank)¹⁶ and architectural similarities between Sabakh (on the east bank) and forts on the Gorgan Wall may suggest that the former was Roman and the latter Sasanian.¹⁷ However, in this dynamic and changing frontier zone these affiliations will have changed through time as suggested, for example, by the density of (likely) Late Sasanian occupation on both sides of the river.¹⁸ The maintenance of the ford through time (possibly from the fourth millennium BC onwards), however, suggests that cultural and economic links likely transcended actual or

perceived military or political boundaries.

The Gorgan Wall and the Sasanian landscape

The Gorgan Plain is defined by the arc of the Alborz Mountains in the south and east, the lower Atrak River in the north and the Caspian Sea in the west. To the south, the Alborz Mountains rise dramatically from the near flat plain to over 3000m in height. The lush vegetation of the Alborz Mountains and the piedmont zone give way to a vast plain, with increasing aridity as one moves north. The long-term settlement history of the region seems to reflect maximum settlement density and investment in agriculture in areas immediately north of the Alborz foothills, diminishing gradually in intensity as one moves towards the Gorgan River which dissects the plain from east to west.¹⁹ Historical and ethnographic accounts from the Islamic period to the early twentieth century indicate a corresponding increase in mobile pastoralism as an important part of subsistence strategies moving from south to north towards and beyond the Gorgan River.²⁰ However, land use practices appear to have been in flux over the long term resulting in periods of significant investment in agriculture in the steppe north of the Gorgan River (see Fig. 2).²¹

Within this complex landscape palimpsest we can identify several ‘signature landscapes’, that is, dominant settlement and land use patterns associated with the economic, political and social situation of a particular period and reflecting adaptations to a specific environmental zone.²² In the southern part of the Gorgan Plain (i.e. roughly from the region of the Gorgan River to the Alborz foothills) the most robust archaeological landscape signature is that of the mid to late Sasanian period (c. later fifth to seventh centuries), characterised by defensive features such as the Gorgan Wall, numerous rectilinear fortified sites, and large scale water management features such as canals.²³ It is likely that accompanying the landscape transformations detailed above, there may have been a similar level of investment in a network for the transport of people and goods within and beyond the empire. While the landscape signature contemporary to the Gorgan Wall may only represent a relatively short period within the life of the empire, because of the robust nature of the features involved in that landscape signature it is likely that evidence for imperial route systems would be more obvious.

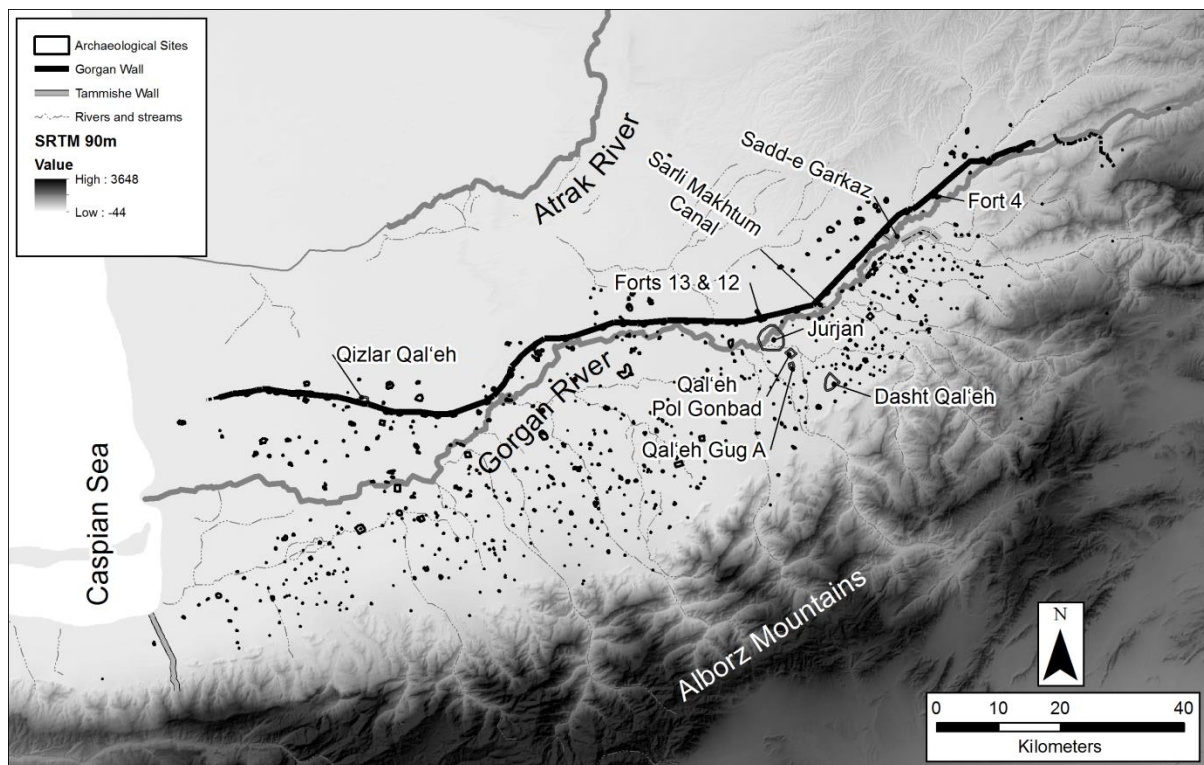


FIGURE 2: MAP OF THE GORGAN PLAIN SHOWING THE GORGAN WALL AND ARCHAEOLOGICAL SITES OF ALL PERIODS MAPPED ON CORONA IMAGERY. SITES AND FEATURES MENTIONED IN THE TEXT ARE MARKED. ELEVATION DATA - SRTM 90 M RESOLUTION (DATA AVAILABLE FROM THE U.S. GEOLOGICAL SURVEY).

Routes within and beyond the Gorgan Plain are mentioned in texts from the Antique through to the Islamic periods.²⁴ There is, however, often very little physical evidence for the routes themselves. Maps and descriptions of the region by nineteenth-century European travellers are more specific, but of course reflect an anachronistic political and cultural landscape.²⁵ However, using this information in combination with archaeological evidence gathered from field survey and the remote sensing of satellite imagery can help us to reconstruct potential route systems of the Sasanian era.

Moving across the frontier

While not impassable, the Alborz Mountains form a significant barrier to movement; traffic between the Gorgan Plain and the Iranian Plateau, both today and in the past, is restricted through a few defiles.²⁶ North of the Alborz Mountains, however, the wide, flat Gorgan Plain presents few natural limitations to movement. Prior to the building of the Gorgan Wall, the main obstacle would have been the Gorgan River dissecting the plain from east to west, which may have been difficult to cross at certain times of year. Le Strange,²⁷ citing the

Islamic geographer Mustawfi (fourteenth century AD), indicates that 'throughout its course the stream was deep, almost unfordable, so that travellers were often drowned in crossing it; and in flood-time its waters were carried off by channels and used up in irrigation, though much always ran to waste', indicating the abundance of water that flowed in the winter and spring months. In summer the river may have been far lower making crossing much easier.²⁸ Howard-Johnston, has suggested, that the Gorgan River did not have the same capacity to act as a defensive barrier as rivers such as the Euphrates or Tigris, and this may be true for part of the year.²⁹ Travel accounts from the nineteenth century AD mention fords and small boats being utilised for the crossing of people and animals,³⁰ and it is likely that fords similar to the one near the Castellum and Sabakh in the Khabur could be found at numerous points along the river. The identification of pre-modern bridges or fords is hampered by the highly active nature of the river. Besides the seasonal flooding, erosion of the loess soils along the river banks is common while the many paleochannels and relict meanders visible on the CORONA imagery and in the field, particularly in the western plain, provide evidence for channel changes at multiple scales.³¹ However, bridges spanning the river are known in Jurjan from the Islamic period.³²

The Gorgan Wall, however, provided a much more reliable barrier to traffic. It also would have channelled movement across the frontier through controllable crossings. Following the course of the river, the wall, built several kilometres to the north, secured the river's resources for both supplying the water-filled ditch on the north side and potentially for irrigating the lands to the south. After the construction of the wall, routes crossing the frontier would have had to negotiate not only crossing the river but also crossing the wall and ditch, likely through well-monitored gates. The Gates of Sul, mentioned by al-Tabari in the ninth century but in reference to supposed events in the later fifth century, may possibly refer to a gate on the Gorgan Plain. Bosworth suggests the gate controlled traffic coming from the north and travelling through Dehistan (south west Turkmenistan), Gorgan and eventually onto the Iranian Plateau.³³ More specifically, it is possible that these gates may refer to a gate in the Gorgan Wall as recently proposed.³⁴

The clearest feature that survives on the CORONA imagery is the wall ditch, not the wall itself, therefore locating gaps or gates in the wall is difficult. However, it is possible that

features such as canals or forts that are numerous along the wall's length may have served also as gates or crossing points. At least five canals supplying the Gorgan Wall ditch have been clearly identified on CORONA satellite imagery and in field survey.³⁵ Besides canals being conduits of movement in their own right, routes along them are also well known in the ancient and modern Middle East.³⁶ All of the known examples of wall ditch feeder canals are located in the eastern end of the plain. Gaps in the wall to accommodate these canals, such as where the Sarli Makhtum canal flows into the wall ditch, could have provided access through the wall if a bridge over the ditch were constructed.³⁷ The Chai Qushan-e Kuchek canal also connects to the wall ditch, and furthermore is fed by an elaborate system involving the transport of water along the Kal-e Garkaz canal and along an earthen aqueduct called the Sadd-e Garkaz, which then may have spanned the Gorgan River via a bridge.³⁸ Whether or not crossing both the river and wall were achievable along this alignment is open to speculation. However, canals that meet the wall ditch near forts (such as at the Band-e Vali Canal, or the possible canal feature west of Fort 4),³⁹ might be far more plausible candidates as crossings when the wall was active, for the purpose of security and taxation. The other likely locations of crossing points of the wall are the forts which line it. The presence of troops at these locations would have provided the opportunity to inspect goods, collect duties and monitor movement. Gates were detected on the wall side of Fort 4 through geophysical survey; this gate was linked by a central road to a gate on the opposite side of the fort.⁴⁰ It is debatable, however, if public access would be permitted through the fort, and if anyone other than the soldiers occupying the structure would have passed through. Crossing points in the wall could also have been located near forts. Two possibilities stand out for the location of such features. One is at the site of Qizlar Qal'eh, a prominent qal'eh (here a morphological category indicating an archaeological mound with a dish shaped interior indicating fortification) that exists as part of a much larger settlement complex known as Qarniareq Qal'eh. Surface survey and associated archaeological features indicate that this complex set of mounds may have been originally occupied in the Iron Age and later incorporated into the defences associated with the Gorgan Wall during the Sasanian period.⁴¹

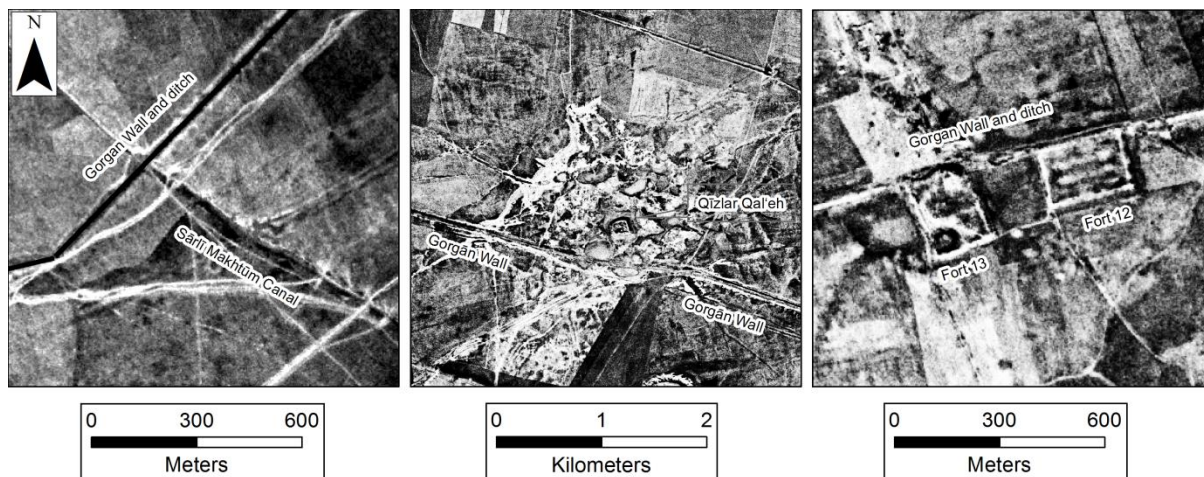


FIGURE 3: POSSIBLE CROSSING POINTS OF THE GORGAN WALL. THE SARLI MAKHTUM CANAL FLOWING THROUGH A GAP IN THE WALL INTO THE DITCH ON ITS NORTHERN SIDE (LEFT); QIZLAR QAL'EH, AN EARLIER SITE INCORPORATED INTO THE GORGAN WALL (CENTRE), AND FORTS 12 AND 13 ON THE GORGAN WALL (RIGHT) ON THE CORONA IMAGERY. CORONA IMAGES FROM OCTOBER 6, 1969 (DATA AVAILABLE FROM THE U.S. GEOLOGICAL SURVEY).

However, the most obvious location for a possible gate is the closely spaced Forts 12 and 13 (see Fig. 3). With only c. 200 m separating them, they create an ideal corridor for monitoring traffic crossing the wall. Fort 12 appears to contain barrack blocks like many of the Forts along the wall.⁴² Fort 13, however, differs in its internal morphology and topographical features are present including, in the northwest corner, a much older tappeh. Low archaeological mounds north and immediately south of Fort 13 may also be part of an earlier site complex. Architectural differences, noted in excavations of the Fort 13 by M.Y. Kiani (that is brick alignment and wall thickness) may suggest a different or supplementary purpose for this structure.⁴³ However, as many of the forts have not been excavated we lack a sufficient comparative sample to draw too many conclusions based on these facts alone. In the next section, the discussion will draw on the available regional and interregional settlement data, including an analysis of historical satellite imagery, to explore whether the last of these proposed crossing points represents a node within a larger interregional network.

An interregional route in the eastern Gorgan Plain: remote sensing of hollow ways

Maps based on aerial photographs and historical CORONA satellite imagery were examined both north and south of Forts 12 and 13 for evidence of ancient tracks, or hollow ways,

leading toward or beyond these forts (see Fig. 4). The maps of M.Y. Kiani, themselves based on aerial photographs, seemed to indicate several routes or tracks in this vicinity.⁴⁴ Many of these correlated to modern roads and tracks, also visible on the CORONA images that led toward or away from the modern city of Gonbad-e Kavus. Besides being oriented on the modern city, these features also appear to dictate modern field boundaries. These are in contrast, both in signature and alignment, to a series of dark hollow way-like features c. 10-20m wide. Different alignments and visible stratigraphic relationships between some of the hollow ways suggest that not all of these features were in use at one time. Several groupings can be commented on.

1. A curving dark linear depression is obvious leading from/to the west side of Fort 13 and might be related to occupation at the fort or the earlier site on this location. No relationship between this and other hollow ways can be established.
2. Two faint hollow ways run southwest to northeast roughly toward the possible gate but fade out between 800 m to one km before reaching them. These are cut by (3).
3. This group appears to branch out from a point along the possible outer wall of the ruins of the town of Jurjan, an important Early Islamic period centre; this site is also a possible candidate for the Sasanian capital of the same name, though trace of an earlier city at this site has yet to be found.⁴⁵ Two of these tracks lead towards Fort 13. All appear to fade out between c. one kilometre and 600m before the wall. It can be assumed that these features are likely contemporary with occupation at Jurjan.
4. Another two hollow ways run from Jurjan toward the wall west of the forts. Before meeting the wall one of these hollow ways is joined by two other tracks coming from an unknown point to the south and together they appear to traverse the wall ditch. As there would be little reason for these tracks to converge if the wall or ditch, even in a ruined state, did not pose some sort of obstacle, these tracks must be contemporary or later than the wall. No clear stratigraphic relationship can be established between this hollow way and the wall ditch on the CORONA image, although it does appear to continue beyond the wall to the north. However, the location where the hollow way meets the wall seems an unlikely candidate for a crossing point while the wall was in use because of the lack of other features in the area.

While this appears to have been a high traffic area in the past, it is difficult to say whether any of this activity was associated with the active period of the wall.

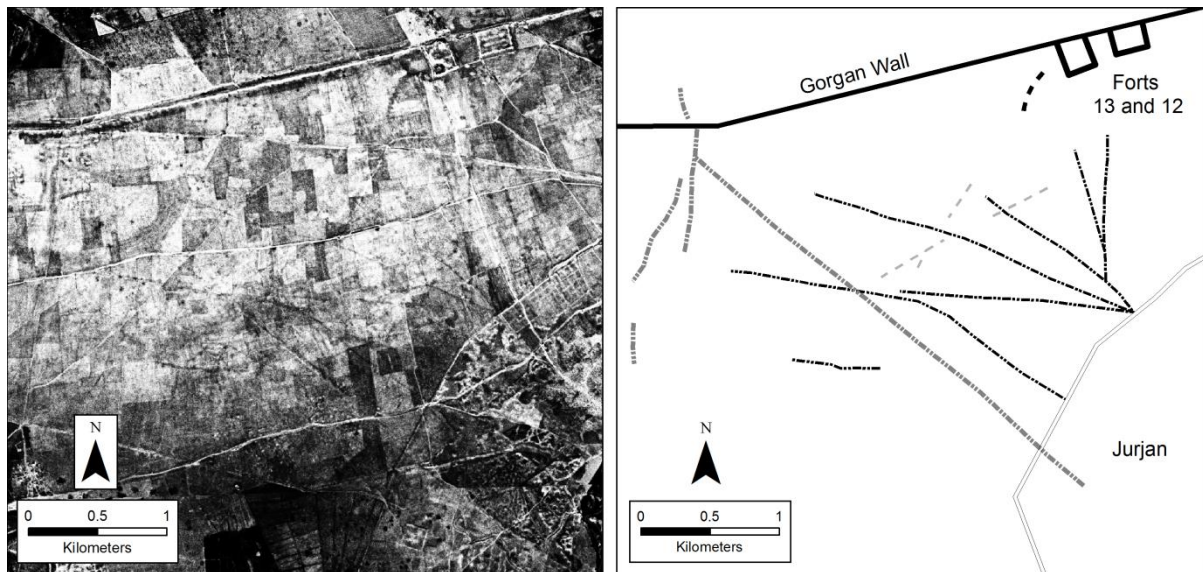


FIGURE 4: HOLLOW WAYS VISIBLE ON THE CORONA IMAGERY NEAR FORTS 12 AND 13. CORONA IMAGE FROM OCTOBER 6, 1969 (DATA AVAILABLE FROM THE U.S. GEOLOGICAL SURVEY).

Settlement data

While routes immediately south of these proposed gates cannot be dated more precisely through the evidence available from remote sensing, widening our view to take into consideration the broader mid to late Sasanian settlement pattern in the region is instructional. Archaeological survey and excavation have revealed several roughly contemporary sites south and south east of Forts 12, 13 and Jurjan. These include two large square fortifications (Qal'eh Gug A and Qal'eh Pol Gonbad, the former of which has been confidently dated by ceramic assessment to the mid Sasanian period).⁴⁶ Another c. 10km further to the south east sits the large urban settlement of Dasht Qal'eh. This c. 338ha site is enclosed within ramparts and has a prominent mound in its southeast corner. Ceramics from the site indicate prehistoric, Sasanian and Early Islamic occupation.⁴⁷ Radiocarbon dates from contexts interpreted as signalling the construction of the ditch and ramparts suggest a date similar to the construction of the Gorgan Wall for the site in its urban form.⁴⁸ These sites form an intriguing alignment of possible gates, fortifications, and an urban centre (see Fig. 5).

Furthermore, continuing to follow the trajectory of this alignment to the south leads to the entrance of one of the most easily traversed passages across the Alborz Mountains that connects the Gorgan Plain to the Great Khorasan Road that ran from Mesopotamia to Central Asia.⁴⁹ Abbasi also notes the presence of a Sasanian period site several kilometres into the pass (from the direction of the plain).⁵⁰ No evidence is currently available on the ceramics from the site, but it presents an intriguing possibility for another node in this route system.

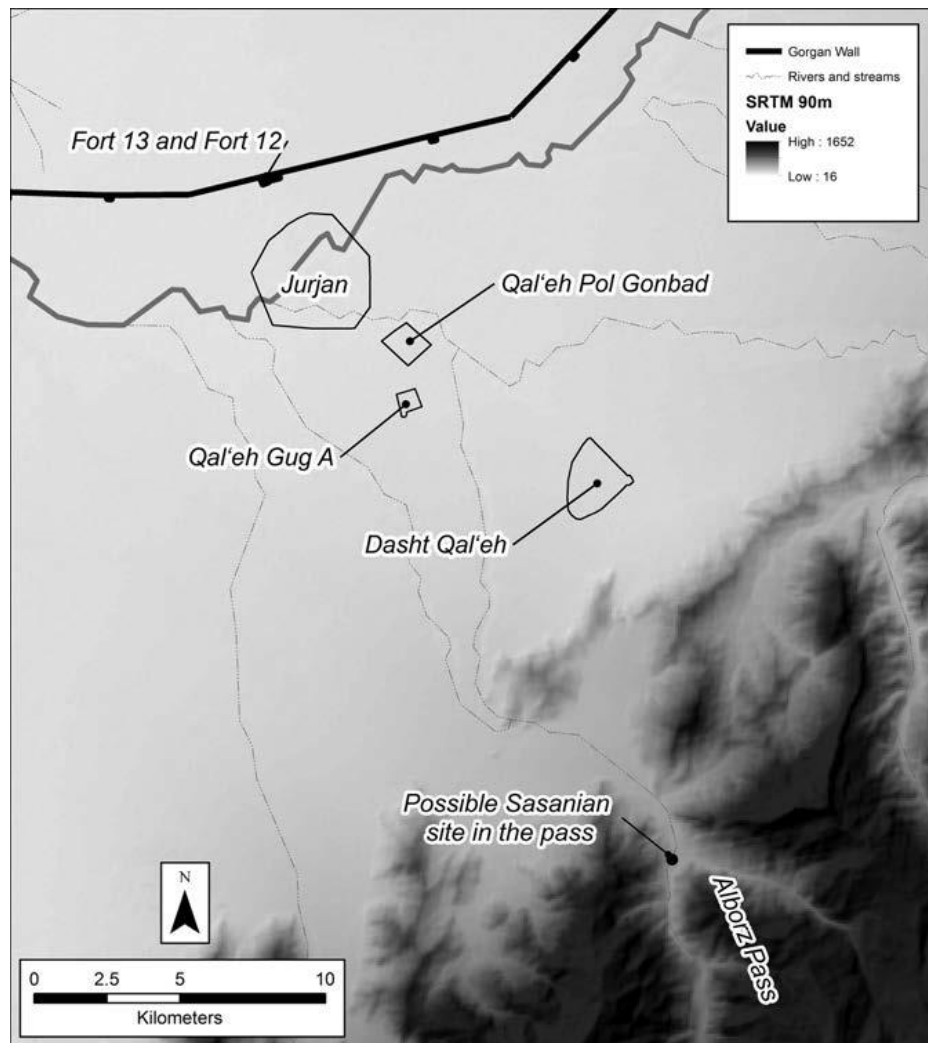


FIGURE 5: A POSSIBLE MID TO LATE SASANIAN ROUTE SYSTEM BASED ON THE ALIGNMENT OF FORTS, CAMPAIGN BASES, URBAN SITES⁵¹, AND A MOUNTAIN PASS. NOTE THE LOCATION OF A POSSIBLE SASANIAN SITE IN THE PASS⁵². ELEVATION DATA - SRTM 90 M RESOLUTION (DATA AVAILABLE FROM THE U.S. GEOLOGICAL SURVEY).

Dasht Qal'eh (possibly a more convincing candidate for Sasanian Jurjan, but certainly another significant Sasanian city), would therefore have sat in a strategic position for

communicating with the plateau to the south and the steppes to the north. People and goods coming from the north could be monitored and taxed, and one or both of the large fortifications to the south could have provided further security. Equally, if we assume that Qal'eh Gug A and Qal'eh Pol-Gonbad were bases for campaigns against the Hephthalites⁵³ then their location on a main route north would make strategic sense. Taken together, the archaeological data draws a convincing picture of an inter-regional route system at an imperial-scale connecting the Iranian plateau, the Gorgan Plain and perhaps the regions north of it.

But what evidence do we have for a continuation of this level of investment in a route system to the north through Dehistan and on to Khwarezm? Textual sources suggest that Sasanian, or more aptly imperial, influence in these regions (either direct or indirect) may have waxed and waned through time based on economic benefits and military threats.⁵⁴ Analysis of ceramics from excavations on the Gorgan Plain and those from survey and excavations of sites in the Misrian Plain (Dehistan), c. 100km north of the Gorgan Wall, suggest similarities in forms between the two regions, and possibly with Khwarezm throughout various points in the Sasanian period.⁵⁵ The complete publication of the ceramics from Sasanian period sites in the Misrian Plain is still awaited, but some material comparable to the mid to late Sasanian assemblages of the Gorgan Plain contemporary with or subsequent to the wall has been noted in material from the sites of Ortadepeslik and Khanly Depe.⁵⁶

Similarities in the material culture of the Gorgan and Misrian Plains in the Sasanian period may suggest a significant level of cultural connectivity between these regions.⁵⁷ The strength of this connectivity, however, is likely found in the longevity of local traditions (dating back to the Iron Age)⁵⁸ as opposed to consistent imperial involvement. However, at times, it would have made strategic sense for the Sasanian Empire to invest directly in Dehistan, and perhaps by extension stations along the route towards it from the South.⁵⁹

The level of investment in a route system beyond the wall in the Sasanian period is not currently known. Settlement data from archaeological survey indicates that there was little settlement immediately north of the wall that can be obviously attributed to the mid to late

Sasanian period.⁶⁰ No clear evidence for a road or hollow way leading from our proposed gate can be seen on the CORONA imagery. However, beyond the core settled area tracks would not be confined to set paths through cultivated fields and the flat topography would not have limited movement to particular corridors. Further remote sensing of the satellite imagery farther north may reveal features associated with routes through this region such as stations, cisterns, and wells as documented in early travellers' accounts.⁶¹ cursory examination of the limited survey data and CORONA imagery already suggests intriguing possibilities for nodes in this network south of the Atrak River.⁶² However, only future fieldwork can help us to date these features with accuracy.

Local pathways of movement and regional connectivity – a diachronic view

Thus far, this chapter has been focussed on building a picture of an interregional network contemporary with the mid to the late Sasanian period. The available evidence can also be used to elaborate on local pathways of movement and suggest ways in which networks may have changed through time.

Evidence for local networks prior to the construction of the Gorgan Wall can be found in abundance to the north of the Gorgan River in the eastern end of the plain. Here, the lack of intensive later land use (until the twentieth century) has resulted in well-preserved hollow way systems radiating out from almost all of the archaeological sites that have been identified through field survey or remote sensing (see Fig. 6 for an example). Ceramic evidence suggests that many of these sites were occupied primarily between the Later Iron Age and Parthian periods.⁶³ In several instances hollow ways appear to connect these sites, further strengthening the argument for contemporaneity at some point during their occupation.⁶⁴ These hollow ways represent local networks through which people and animals could travel to fields, water sources (such as the Gorgan River) or perhaps to pastures beyond the limits of cultivation around a site. Equally, some can be seen to represent a regional network facilitating movement between sites and across the plain.

These networks appear to have no longer been in use by the time the Gorgan Wall was built. Hollow ways radiating out from the site of GWS-25 in the eastern steppe north of the Gorgan River, for example, are clearly cut by the Gorgan Wall ditch (see Fig. 6). GWS-25, and

its neighbouring sites such as GWS-26 and GWS-27, all possibly linked through hollow ways, were likely occupied at the same time at some point between the Late Iron Age and Parthian periods, after which the latter two (and by extension the use of these routes) were abandoned. At GWS-25, however, there is possible evidence for Early Sasanian occupation, suggesting that some of these pathways of movement may have continued to be used.⁶⁵ As such, the pattern of settlement characteristic of the mid to late Sasanian period, in which almost all occupation is concentrated in the southern part of the plain, may have been a gradual process. We know that by the fourth century, Sasanian emperors were already campaigning against nomadic groups north of the Gorgan Plain⁶⁶ and this threat could have been a contributing factor in formalising the Sasanian settlement pattern that is solidified after the wall was built. Clearly the construction of the wall would have altered connectivity on the plain by cutting across local routes that may have been in use for several centuries prior.

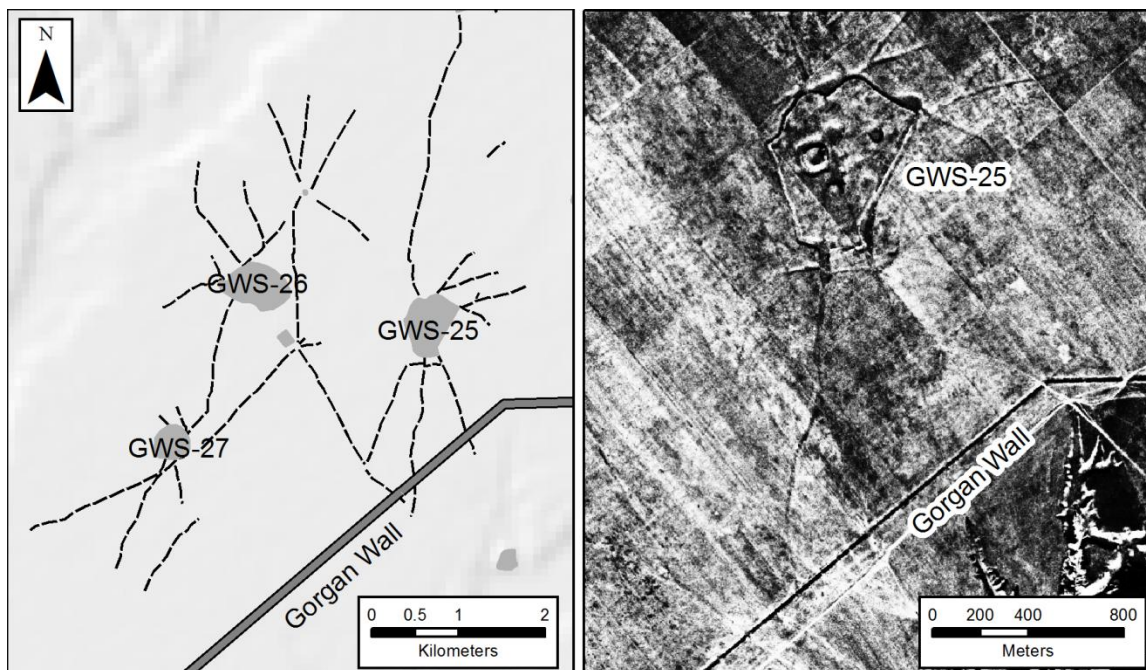


FIGURE 6: EARLIER HOLLOW WAYS CUT BY THE GORGAN WALL. ELEVATION DATA - SRTM 90 M RESOLUTION. CORONA IMAGE FROM OCTOBER 6, 1969 (DATA AVAILABLE FROM THE U.S. GEOLOGICAL SURVEY).

As our understanding of the Early Sasanian period on the Gorgan Plain is sketchy at best, it is difficult to say whether any kind of formal military frontier existed, and how it affected movement on a regional scale. If a military frontier did exist it may have been more permeable, perhaps consisting of an arrangement of sites and fortifications like the Limes Arabicus of the Roman/Byzantine Empire; this system would allow for tabs to be kept on

seasonal movements of mobile pastoral groups, but would not exclude trade or the daily movement of herds.⁶⁷ It is also difficult to say, without further chronological refinement, at what level movement through the Gorgan Wall was regulated from the period of its construction through to the end of the Sasanian period. Periods of more cordial political relations with the Hephthalites or the need to send troops elsewhere could have reduced the number of persons active along the wall⁶⁸ though crossing points may still have been used to collect tolls on goods moving into and out of the empire.

What is clear, however, is that while the wall was actively in use from the fifth/ sixth to seventh centuries, small and medium scale movement on a regular basis would likely have been restricted to the southern half of the plain. The wall would have constituted a considerable barrier to movement at all but a few tightly controlled crossings, making daily movements toward the northern part of the plain, perhaps in search of pasture, less likely. However, the exploitation of various herd animals is clear in the faunal remains recovered from mid to late Sasanian sites on the plain, suggesting that alternative patterns of local movement must have developed while the wall was in use.⁶⁹

Conclusion

The scale of imperial investment in the landscapes of the Gorgan Plain in the mid to late Sasanian period makes it easier to identify nodes within large-scale networks. However, it is clear that an immense amount of work still needs to be done in order to understand the different spatial and temporal manifestations of local and imperial networks on this and other Sasanian frontiers. It is hoped with further work we can refine our understanding of the chronological developments during the Sasanian period. What is likely is that a physical boundary like the wall would have substantially changed the way in which people moved around the plain, and beyond it. However, even physical boundaries are not completely restrictive and economic, cultural, and social networks often cross them.⁷⁰ The available evidence suggests that military boundaries did not consistently match with the limits of political or economic influence, or indeed the cultural connectivity evident between the Gorgan Plain and communities to the north over the long term.

Bibliography

Abbasi, G. (2011), *Final Report of the Archaeological Excavations at Narges Tappeh, Gorgān Plain, Iran* (in Persian), Golestan Cultural and Heritage Organization and Golestan Higher Education Institute.

Arne, T. J. (1945), *Excavations at Shah Tepe, Iran*, Stockholm: Elanders Boktryckeri Aktiebolag Göteborg.

Baker, V. (1876), *Clouds in the East: Travels and Adventures on the Perso-Turkman Frontier*, London: Chatton and Windus.

Bivar, A. D. H. (1983), 'The History of Eastern Iran', in E. Yarshater (ed.), *The Cambridge History of Iran, The Seleucid, Parthian and Sasanian Periods*, Cambridge: Cambridge University Press, vol. 1 (3), pp. 180-231.

Bode, C. A. de. (1848), 'On the Yamud and Goklan Tribes of Turkomania', *Journal of the Ethnological Society of London*, 1, pp. 60-78.

Bosworth, C. E. (trans.) (1989a), *The History of al-Ṭabarī V: The Sāsānids, the Byzantines, the Lakhmids, and Yemen*, New York: State University of New York Press.

Bosworth, C. E. (trans.) (1989b), *The History of al-Ṭabarī XXX: The Abbāsīd Caliphate in Equilibrium: The Caliphates of Mūsā al-Hādī and Hārūn al-Rashīd a.d. 785–809/A.H. 169–193*, New York: State University of New York Press.

Boucharlat, R. and Lecomte, O. (1987), *Fouilles de Tureng Tepe:1. Les périodes sassanides et islamiques*, Paris: Editions Recherche sur les Civilisations.

Casana, J. (2013), 'Radial Route Systems and Agro-Pastoral Strategies in the Fertile Crescent: New Discoveries from Western Syria and Southwestern Iran', *Journal of Anthropological Archaeology*, 32 (2), pp. 257-73.

Cleuziou, S. (1985), 'L'Age du Fer a Tureng Tepe (Iran) et ses relations avec l'Asie centrale', in *L'archéologie de la Bactriane Ancienne: Actes du colloque franco-sovietique, Dushanbe (U.R.S.S.), 27 octobre–3 novembre 1982*, Paris: Editions du CNRS, pp. 175-201.

Collins, B. (trans.) (2001), *The Best Divisions for Knowledge of the Regions by Al-Muqaddasi*, Reading: Garnet Publishing.

Eaton, R. (2005), 'Three Overlapping Frontiers in Early Modern Bengal: Religious, Agrarian, Imperial', in L. Rodseth and B. Parker (eds), *Untaming the Frontier in Anthropology, Archaeology, and History*, Tucson: University of Arizona Press, pp. 52-82.

Elton, H. (1996), *Frontiers of the Roman Empire*, Bloomington: Indiana University Press.

Fisher, W.B. (1968), Physical Geography, in W.B. Fisher (ed), *The Cambridge History of Iran*, Cambridge: Cambridge University Press, pp. 1–110.

Fisher, G. (2004), 'A New Perspective on Rome's Desert Frontier', *Bulletin of the American Schools of Oriental Research*, 336, pp. 49-60.

Frye, R. N. (1983), 'The Political History of Iran under the Sasanians', in *The Cambridge History of Iran: The Seleucid, Parthian and Sasanian Periods*, 3.1, Cambridge: Cambridge University Press, pp. 116-80.

Glatz, C. and Matthews, R. (2005), 'Anthropology of a Frontier Zone: Hittite–Kaska Relations in Late Bronze Age North-Central Anatolia', *Bulletin of the American Schools of Oriental Research*, 339, pp. 47-65.

Green, W. A. (2001), 'Area JF (Jaghjagh Ford)' in G. Emberling and H. McDonald, 'Excavations at Tell Brak 2000: Preliminary Report', *Iraq*, 63, pp. 46-9.

Helms, S. W., Yagodin, V. N., Betts, A. V. G., Khozhaniyazov, G. and Negus, M. (2002), 'The Karakalpak-Australian Excavations in Ancient Chorasmia: The Northern Frontier of the "Civilised World"', *Ancient Near Eastern Studies*, 39, pp. 3-44.

Hopper, K. and Omrani Rekavandi, H. (in press), 'Investigating Mobile Pastoralist Landscapes in North East Iran: The Contribution of Remote Sensing', in D. Lawrence, M. Altaweel, and G. Philip (eds), *New Agendas in Remote Sensing and Landscape Archaeology: Studies in Honor of Tony J. Wilkinson*, Chicago: Oriental Institute of the University of Chicago.

Howard-Johnston, J. (2012), 'The Late Sasanian Army', in T. Bernheimer and A. Silverstein

(eds), *Late Antiquity: Eastern Perspectives*, Oxford: Gibb Memorial Trust, pp. 87-127.

Irons, W. (1969), 'The Turkmen of Iran: A Brief Research Report', *Iranian Studies*, 2(1), pp. 27-38.

Irons, W. (1974) 'Nomadism as a Political Adaptation: The Case of the Yomut Turkmen', *American Ethnologist*, 1(4), pp. 635-58.

Kiani, M. Y. (1982), *Parthian Sites in Hyrcania: The Gurgan Plain*, Berlin: Reimer.

Kiani, M. Y. (1984), *The Islamic City of Gurgan*, Berlin: Reimer.

Lattimore, O. (1951), *Inner Asian Frontiers of China*, New York: American Geographical Society.

Lecomte, O. (1999), 'Vehrkana and Dehistan: Late Farming Communities of South-West Turkmenistan from the Iron Age to the Islamic Period', *Parthica - Incontri di culture nel mondo antico*, 1, pp. 135-70.

Lecomte, O. (2007), 'Gorgān and Dehistan: The North-East Frontier of the Iranian Empire', in J. Cribb and G. Herrmann (eds), *Proceedings of the British Academy: After Alexander: Central Asia Before Islam*, Oxford: Oxford University Press, pp. 295-312.

Lecomte, O. (2009), 'Origine des cultures agricoles du Dehistan (Sud-Ouest Turkmenistan)' in M. Mouton and M. Al-Dbiyat (eds), *Stratégies d'acquisition de l'eau et société au Moyen-Orient depuis l'Antiquité*, Paris: Institut Français du Proche-Orient, pp. 69-77.

Le Strange, G. (1905), *The Lands of the Eastern Caliphate: Mesopotamia, Persia, and Central Asia, from the Moslem Conquest to the Time of Timur*, Cambridge: Cambridge University Press.

Lightfoot, K. G. and Martinez, A. (1995), 'Frontiers and Boundaries in Archaeological Perspective', *Annual Review of Anthropology*, 24, pp. 471-92.

Liverani, M. (1988), The growth of the Assyrian Empire in the Habur/Middle Euphrates area: a new paradigm, *State Archives of Assyria Bulletin* 2.2, pp. 81-98.

Litivinsky, B. A. (1996), 'The Hephthalite Empire', in B. A. Litivinsky (ed.), *History of Civilizations of Central Asia, Vol. III: The Crossroads of Civilizations: A.D. 250-750*, Paris: UNESCO Publishing, pp. 135-62.

Marvin, C. (1881), *Merv, the Queen of the World; and the Scourge of the Man-Stealing Turcomans*, London: W.H. Allen and Co.

Mashkour, M. (2013), 'Animal Bones' in Sauer et al. 2013, pp. 539-80.

Mayerson, P. (1986), 'The Saracens and the Limes', *Bulletin of the American Schools of Oriental Research*, 262, pp. 35-47.

Mayerson, P. (1989), 'Saracens and Romans: Micro-Macro Relationships', *Bulletin of the American Schools of Oriental Research*, 274, pp. 71-9.

Morgan, J. de (1894), *Mission scientifique en Perse. Cartes*, Paris: E. Leroux.

Muraviev, N. (1871), *Journey to Khiva Through the Turcoman Country, 1819-20. Translated from Russian by P. Strahl and from German by W.S.A. Lockhart*, Calcutta: Foreign Department Press.

Napier, G. C. and Ahmad, K. S. (1876), 'Extracts from a Diary of a Tour in Khorassan, and Notes on the Eastern Alburz Tract; with Notes on the Yomut Tribe', *Journal of the Royal Geographical Society of London*, 46, pp. 62-171.

Nerazik, E. E. and Bulgakov, P. G. (1996), 'Khwarizm', in B. A. Litivinsky (ed.), *History of Civilizations of Central Asia, Vol. III: The Crossroads of Civilizations: A.D. 250-750*, Paris: UNESCO Publishing, pp. 207-32.

Nokandeh, J., Sauer, E. W., Omrani Rekavandi, H., Wilkinson, T., Abbasi, G. A., Schwenniger, J.-L., Mahmoudi, M., Parker, D., Fattahi, M., Usher-Wilson, L. S., Ershadi, M., Ratcliffe, J. and Gale, R. (2006), 'Linear Barriers of Northern Iran: The Great Wall of Gorgān and the Wall of Tammishe', *Iran*, 44, pp. 121-73.

O'Donovan, E. (1882), *The Merv Oasis: Travels and Adventures East of the Caspian During the Years 1879-80-81*, New York: G.P. Putnam's Sons.

Oates, D., and Oates, J. (1990), 'Aspects of Hellenistic and Roman Settlement in the Khabur Basin', in P. Matthiae, M. van Loon and H. Weiss (eds), *Resurrecting the Past: A Joint Tribute to Adnan Bounni*, Leiden: Nederlands Instituut voor het Nabije Oosten, pp. 227-48.

Okazaki, S. (1968), *The Development of Large-Scale Farming in Iran: The Case of the Province of Gorgān*, Tokyo: The Institute of Asian Economic Affairs.

Omrani Rekavandi, H., Sauer, E. W., Wilkinson, T., Safari Tamak, E., Ainslie, R., Mahmoudi, M., Griffiths, S., Ershadi, M., Jansen Van Rensburg, J., Fattahi, M., Ratcliffe, J., Nokandeh, J., Nazifi, A., Thomas, R., Gale, R. and Hoffmann, B. (2007), 'An Imperial Frontier of the Sasanian Empire: Further Fieldwork at the Great Wall of Gorgān', *Iran*, 45, pp. 95-136.

Omrani Rekavandi, H. O., Sauer, E. W., Wilkinson, T., Abbasi, G. A., Priestman, S., Safari Tamak, E., Ainslie, R., Mahmoudi, M., Galiatsatos, N., Roustai, K., Jansen Van Rensburg, J., Ershadi, M., MacDonald, E., Fattahi, M., Oatley, C., Shabani, B., Ratcliffe, J. Usher-Wilson, L. S. (2008), 'Sasanian Walls, Hinterland Fortresses and Abandoned Ancient Irrigated Landscapes: The 2007 Season on the Great Wall of Gorgān and the Wall of Tammishe', *Iran*, 46, pp. 151-78.

Parker, B.J. (2002), 'At the Edge of Empire: Conceptualizing Assyria's Anatolian Frontier ca. 700 BC', *Journal of Anthropological Archaeology*, 21(3), pp. 371-95.

Priestman, S. (2013), 'Sasanian Ceramics from the Gorgān Wall and Other Sites on the Gorgān Plain', in Sauer et al. 2013, pp. 447-534. Rodseth, L. and Parker, Bradley J. (2005), *Untaming the Frontier in Anthropology, Archaeology, and History*, Tucson: University of Arizona Press.

Sauer, E. W. (in press), 'The Gorgan Wall's Garrison Revealed via Satellite Search', in D. Lawrence, M. Altaweel and G. Philip (eds), *New Agendas in Remote Sensing and Landscape Archaeology: Studies in Honor of Tony J. Wilkinson*, Chicago: Oriental Institute of the University of Chicago.

Sauer, E. W., Omrani Rekavandi, H., Wilkinson, T. J., Nokandeh, J. et al. (2013), *Persia's Imperial Power in Late Antiquity: The Great Wall of Gorgān and Frontier Landscapes of Sasanian Iran*. British Institute of Persian Studies Archaeological Monographs Series, II,

Oxford: Oxbow Books.

Sauer, E. W., Pitskhelauri, K., Hopper, K., Tiliakou, A., Pickard, C., Lawrence, D., Diana, A., Kranioti, E. and Shupe, C. (2015), 'Northern Outpost of the Caliphate: Maintaining Military Forces in a Hostile Environment (the Dariali Gorge in the Central Caucasus in Georgia)', *Antiquity*, 89, pp. 885-904.

Schoff, W. H. (trans.) (1914), *Parthian Stations by Isidore of Charax: An Account of the Overland Trade Route Between the Levant and India in the First Century B.C.*, Philadelphia: Commercial Museum.

Shiomi, H. (1976), *Archaeological Map of the Gorgān Plain, Iran No. 1*, Hiroshima University Scientific Expedition to Iran, Hiroshima: Denshi Insatsu Co. Ltd.

Shiomi, H. (1978), *Archaeological Map of the Gorgān Plain, Iran No. 2*, Hiroshima University Scientific Expedition to Iran, Hiroshima: Denshi Insatsu Co. Ltd.

Simpson, St J. (1996), 'From Tekrit to the Jaghjagh: Sasanian Sites, Settlement Patterns and Material Culture in Northern Mesopotamia', in K. Bartl and S. R. Hauser (eds), *Continuity and Change in Northern Mesopotamia from the Hellenistic to the Early Islamic Period*, Berlin: Reimer, pp. 87-126.

Smith, M. (2005), 'Networks, Territories, and the Cartography of Ancient States', *Annals of the Association of American Geographers*, 95(4), pp. 832-49.

Ur, J. A. (2003), 'CORONA Satellite Photography and Ancient Road Networks: A Northern Mesopotamian Case Study', *Antiquity*, 77, pp. 102-15.

Ur, J. A. (2010), *Urbanism and Cultural Landscapes in Northeastern Syria: The Tell Hamoukar Survey, 1999–2001*, *Oriental Institute Publications 137*, Chicago: Oriental Institute of the University of Chicago.

Ur, J. A., Karsgaard, P., and Oates, J. (2011), 'The Spatial Dimensions of Early Mesopotamian Urbanism: The Tell Brak Suburban Survey, 2003-2006', *Iraq*, 73, pp. 1-19.

Vámbéry, A. (1864), *Travels in Central Asia*, London: John Murray, Albemarle Street.

Wilkinson, T. J. (1990), 'The Development of Settlement in the North Jazira between the 7th and 1st Millennia BC', *Iraq*, 52, pp. 49-62

Wilkinson, T. J. (2003), *Archaeological Landscapes of the Near East*, Tucson: University of Arizona Press.

Wilkinson, T. J., French, C., Ur, J. A. and Semple, M. (2010), 'The Geoarchaeology of Route Systems in Northern Syria', *Geoarchaeology*, 25(6), pp. 745-71.

Wilkinson, T. J., Omrani Rekavandi, H., Hopper, K., Priestman, S., Roustaei, K., and Galiatsatos, N. (2013), 'The Landscapes of the Gorgān Wall', in Sauer et al. 2013, pp. 24-132.

Yate, C.E. (1900), *Khurasan and Sistan*, Edinburgh: Blackwood

¹ Durham University.

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² Eaton 2005: 52; Elton 1996; Glatz and Matthews 2005; Lattimore 1951; Lightfoot and Martinez 1995: 472; Parker 2002; Rodseth and Parker 2005: 12; Smith 2005.

³ See Lawrence and Wilkinson, this volume; Nokandeh *et al.* 2006; Omrani Rekavandi *et al.* 2007; Omrani Rekavandi *et al.* 2008; Sauer *et al.* 2013.

⁴ Liverani 1988: 85-6; Smith 2005.

⁵ See next section.

⁶ See Smith 2005.

⁷ Sauer *et al.* 2015; Fig. 6.1

⁸ Wilkinson 1990; Wilkinson 2003: 111-17.

⁹ Casana 2013; Ur 2003 and 2010; Wilkinson 2003.

¹⁰ Ur 2003; Wilkinson *et al.* 2010.

¹¹ Casana 2013: 7-10.

¹² Wilkinson 2003: 41-3.

¹³ Equally, alignments of sites, and landscape features, as well as linear boundaries, can also be interpreted as corridors of movement (Parker 2002: 373; Smith 2005). Lawrence and Wilkinson (this volume) have presented a convincing argument for a potential Sasanian route system following a line of fortified sites that form nodes in a larger imperial network in the Caucasus.

¹⁴ Green 2001: 46-9; Oates and Oates 1990: 230, Fig. 62; Simpson 1996: 90; Fig. 6.1.

¹⁵ Simpson 1996: 90.

¹⁶ Oates and Oates 1990: 227; Ur *et al.* 2011: 15.

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- ¹⁷ Sauer *et al.* 2013: 235-37.
- ¹⁸ See Lawrence and Wilkinson, this volume.
- ¹⁹ Abbasi 2011; Arne 1945; Wilkinson *et al.* 2013; Shiomi 1976 and 1978.
- ²⁰ Bode 1848; Bosworth 1989b; Hopper and Omrani Rekavandi in press; Irons 1969 and 1974; Muraviev 1871; Okazaki 1968; Vambery 1864; Yate 1900: 256-60.
- ²¹ Wilkinson *et al.* 2013: 93.
- ²² Wilkinson 2003: 9.
- ²³ Wilkinson *et al.* 2013: 100-2.
- ²⁴ Collins 2001: 291; Le Strange 1905: 380; Schoff 1914: 8-9.
- ²⁵ See Baker 1876; Muraviev 1871; Napier and Ahmad 1876; Marvin 1881; Vámbéry 1864: 80-1.
- ²⁶ Fisher 1968: 38.
- ²⁷ Le Strange 1905: 376-7.
- ²⁸ Muraviev 1871: 12.
- ²⁹ Howard-Johnston 2012: 100.
- ³⁰ Muraviev 1871: 12; O'Donovan 1882: 291.
- ³¹ Wilkinson *et al.* 2013: 30-2, Fig. 3.7.
- ³² Kiani 1982: Fig. 1; Collins 2001: 291; Le Strange 1905: 377, citing Ibn Hawkal.
- ³³ Bosworth 1989a: 113.
- ³⁴ Sauer *et al.* 2013: 4.
- ³⁵ Wilkinson *et al.* 2013: 72-80.
- ³⁶ Smith 2005: 841; Wilkinson *et al.* 2013: 80.
- ³⁷ Wilkinson *et al.* 2013: 76; see Fig. 6.3.
- ³⁸ *Ibid.*: 73-76; Sauer *et al.* 2013: 637-38, 640.
- ³⁹ Wilkinson *et al.* 2013: 79-80
- ⁴⁰ Sauer *et al.* 2013: 184.
- ⁴¹ Kiani 1982: Fig. 8a; Wilkinson *et al.* 2013: 124; see Fig. 6.3.
- ⁴² See Sauer *et al.* 2013: 232 ; Sauer *et al.* Forthcoming.
- ⁴³ Kiani 1982: 17, 43; Sauer *et al.* 2013: 174.
- ⁴⁴ Kiani 1982.
- ⁴⁵ Kiani 1984; Sauer *et al.* 2013: 360.

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- ⁴⁶ Wilkinson *et al.* 2013: 124.
- ⁴⁷ Priestman 2013: 523.
- ⁴⁸ Sauer *et al.* 2013: 401-2.
- ⁴⁹ Le Strange 1905: 9, Map X; Marvin 1881: Map 2; Napier and Ahmad 1876: 111.
- ⁵⁰ Abbasi 2011: 217-18.
- ⁵¹ Sauer *et al.* 2013: Wilkinson *et al.* 2013: 102-45
- ⁵² Abbasi 2011: 217-18
- ⁵³ See Sauer *et al.* 2013: 309-11.
- ⁵⁴ Bivar 1983: 210-15; Frye 1983: 129; Helms *et al.* 2002; Lecomte 1999: 145-7; Lecomte 2007: 306-7; Nerazik and Bulgakov 1996: 208-9.
- ⁵⁵ Boucharlet and Lecomte 1987: 113, 119; Lecomte 1999: 162; Lecomte 2007: 304; Priestman 2013: 529-30.
- ⁵⁶ Priestman 2013: 529-30.
- ⁵⁷ Lecomte 2007: 304.
- ⁵⁸ See Cleuziou 1985: 175-9; Lecomte 1999: 138.
- ⁵⁹ See Lecomte 2007: 307. Lecomte, for example, has suggested, based on textual references and site layout that the site of Ulu Kizylli in the Misrian Plain may in fact have originated as the Sasanian city of Shahrestan-e Yazdegird founded by Yazdegird II, as a base from which to campaign against the Hephthalites in the fifth century. Of course, only further archaeological explorations will be able to confirm or deny this.
- ⁶⁰ Wilkinson *et al.* 2013: 103.
- ⁶¹ Marvin 1881: 38, Vambery 1864: 83.
- ⁶² Morgan 1895; Kiani 1982: Figs 30-1.
- ⁶³ Wilkinson *et al.* 2013: 99-100.
- ⁶⁴ *Ibid.* 2013: 45-8.
- ⁶⁵ *Ibid.* 2013: 119
- ⁶⁶ Bivar 1983: 211; Litivinsky 1996: 138.
- ⁶⁷ Fisher 2004; Mayerson 1986: 71, 1989. Lecomte (2009: 301, 310-11) believing the Gorgan Wall to originally be a Parthian construction, reused in the Sasanian period, has suggested a *limes* style second line of defence existed behind the wall within the plain. While the dating of the wall has now been confirmed as Sasanian, it is possible that a *limes* style arrangement

may have predated the wall, or indeed existed behind it.

⁶⁸ Sauer *et al.* 2013: 214-15.

⁶⁹ Mashkour 2013; Mashkour, this volume.

⁷⁰ Lightfoot and Martinez 2005: 482.